

DESCRIPTION OF THE MALE OF *NEUROBEZZIA GRANULOSA*  
(WIRTH) (DIPTERA: CERATOPOGONIDAE)

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*Abstract.*—The male of *Neurobezzia granulosa* (Wirth) is described and illustrated for the first time. Locality records are presented. The genus is compared with its nearest relative, *Neurohelea* Kieffer.

Wirth and Ratanaworabhan (1972) proposed the genus *Neurobezzia* for *Bezzia granulosa* Wirth (1952) from California and indicated its relationship to *Neurohelea* Kieffer in the predaceous midge tribe Heteromyiini. The genus *Neurobezzia* has been known only from the female sex of *granulosa*; in this paper we provide the first description and illustrations of the male. For an explanation of special terminology of Ceratopogonidae see Wirth (1952); terms dealing with male genitalia are those of Snodgrass (1957).

*Neurobezzia* probably evolved from an ancestor most similar to *Neurohelea*. We believe that these two genera are plesiotypic in comparison with other genera in the tribe Heteromyiini and that they are probably annectant types similar to ancestral heteromyiines. This is plausible in view of the fact that they lack elongated hind 4th tarsomeres, elongated hind claws, bifid 4th tarsomeres, or spinose fore femora, apotypic characters present in other genera in this tribe. Wirth et al. (1974) included these two genera in their key to the Ceratopogonidae. They may be further differentiated by the following characters:

<i>Neurobezzia</i>	<i>Neurohelea</i>
Wing with 1 radial cell	Wing with 2 radial cells
Hind claws without basal inner teeth	Hind claws with basal inner teeth
Antennal ratio 0.89-0.94	Antennal ratio 1.28-1.33
Claspettes narrowly separated basally	Claspettes broadly separated basally

*Neurobezzia granulosa* (Wirth)

Fig. 1

*Bezzia granulosa* Wirth, 1952:240 (female; California).

*Neurobezzia granulosa* (Wirth); Wirth and Ratanaworabhan, 1972:244 (combination; fig. female flagellum, wing, mandible, palpus, legs, claws, genitalia).

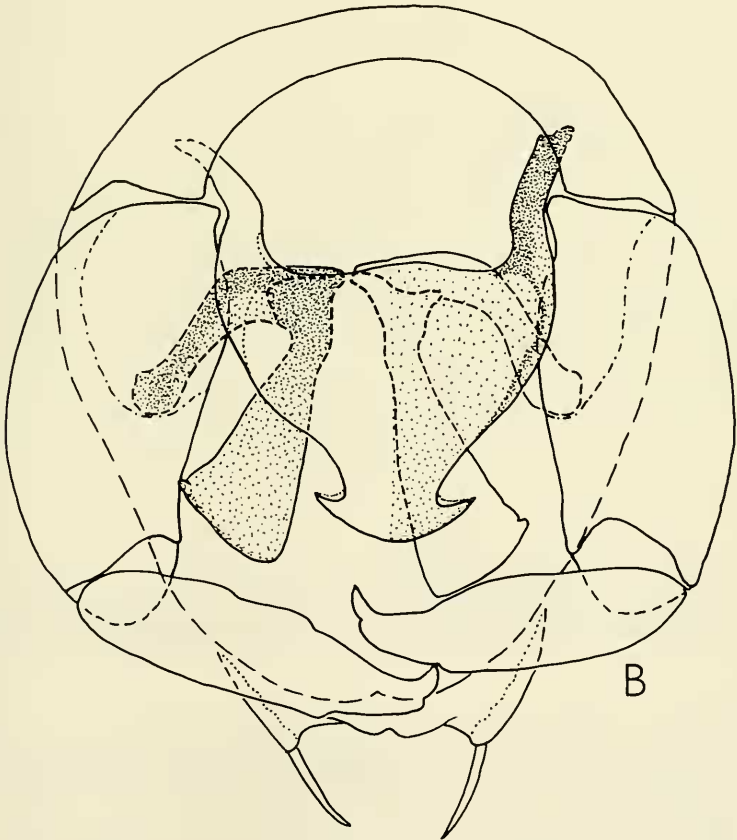
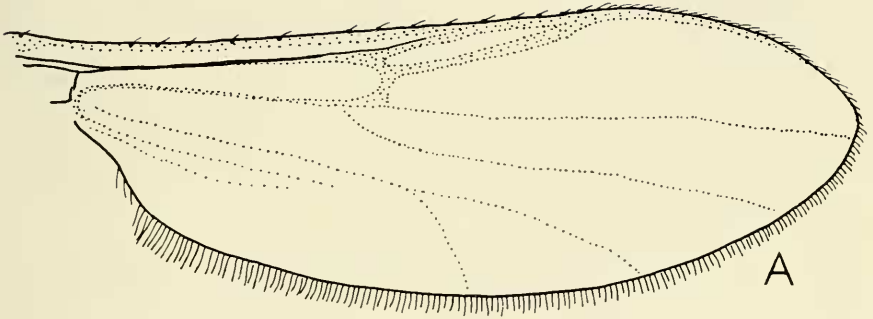


Fig. 1. *Neurobezzia granulosa*, male. A, Wing. B, Genitalia.

*Female*.—For a detailed description of the female see Wirth (1952) and Wirth and Ratanaworabhan (1972). To these descriptions may be added the following: Wing length 1.85 mm; breadth 0.68–0.74 mm; costal ratio 0.91–0.93; vein M2 complete, forking at r-m crossvein as described by Wirth (1952), not obsolescent at base as figured by Wirth and Ratanaworabhan (1972). Antennal flagellomeres with lengths in proportion of 23-15-15-15-15-16-18-19-23-23-24-23-28; palpal ratio 2.59–2.67. Claws of fore and mid legs with basal inner teeth; hind claws without basal inner teeth.

*Male*.—Wing length 0.94–1.00 mm; breadth 0.35 mm.

Head: Dark brown. Eyes narrowly separated. Antennal pedicel darker brown; flagellum brown; proximal 10 flagellomeres ovoid, distal 3 flagellomeres elongate; plume moderately well developed. Palpus light brown, relatively short, extending just beyond tip of proboscis.

Thorax: Brown. Legs lighter brown; 4th tarsomeres cordiform; 5th tarsomeres slightly swollen; claws small, equal, without basal inner claws, tips bifid. Wing (Fig. 1A) hyaline, more slender than in female; anterior veins pale gray, just slightly darker than posterior veins; radial cell extending to 0.66 of wing length, costa extending beyond to 0.95 of wing length and bearing a sparse fringe; media forking just proximad of r-m crossvein, mediocubital fork slightly beyond r-m crossvein. Halter brown.

Abdomen: Brown; intersegmental areas pale; pleuron granular purple. Genitalia as in Fig. 1B. Ninth sternum 3.3× broader than long, base curved with a broad deep caudomedian excavation, ventral membrane spiculate; 9th tergum tapering slightly distally to a broad rounded tip with a subapical row of 7 large setae, cerci short, each bearing a single large stout seta. Basimere curved, 2.25× longer than broad; telomere nearly straight, covered with dense fine pubescence, tip curved and pointed. Aedeagus about as long as broad, membrane and ventral surface spiculate, basal arch broad, reaching to 0.35 of total length; basal arm long, slightly recurved, very heavily sclerotized; distal portion more lightly sclerotized, tapering slightly distally on proximal  $\frac{2}{3}$  then abruptly on distal  $\frac{1}{3}$  to a rounded tip; underlying membrane broadly crescent-shaped and extending beyond tip of aedeagus. Claspettes narrowly separated; distal portion heavily sclerotized, expanded distally into broad paddle shaped structures; basal arm more heavily sclerotized, recurved nearly 180°, tip slightly bulbous.

*Distribution*.—California and Oregon; locality records plotted in Fig. 2.

*New records*.—CALIFORNIA: *Tulare Co.*, Elderwood, 14 May 1976, W. D. Murray, 2 ♂. OREGON: *Deschutes Co.*, Sparks Lake, 24 July 1969, K. Goeden, light trap, 1 ♀.

*Discussion*.—Our presumption that the Tulare County males are



Fig. 2. Locality records for *Neurobezzia granulosa*.

*Neurobezzia granulosa* is based on a careful comparison with the male characters of other genera of Heteromyiini, and the elimination of those whose males differ markedly, or which are not known to occur in the western United States. We are troubled by the fact that the males have legs without distinct paler markings, while the females of *N. granulosa* have bicolored legs. However the leg color varies somewhat in our females, and sexual dimorphism in leg color is common in known species of Heteromyiini. The position of the base of vein M<sub>2</sub>, arising at the r-m crossvein in the female, and arising slightly proximad in the male also forms a discrepancy which possibly can be explained by the usual sexual dimorphism in wing venation common in this tribe.

#### Acknowledgments

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